UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105

December 7, 2005

In Reply Refer To: WTR-7

John Ortiz, Environmental Manager
Precision Anodizing & Plating, Incorporated
1601 North Miller Street
Anaheim, California 92806-1417

Re: June 20, 2005 Clean Water Act Inspection

Dear Mr. Ortiz:

Enclosed is the December 7, 2005 report for our June 20 inspection of Precision Anodizing & Plating. Please submit a short response to the findings in Sections 2 through 5 of this report, to EPA, Orange County, and the Regional Board, by January 30, 2006.

The main findings are summarized below:

1 The Orange County permit applied the correct Federal standards. The only Federal standards that apply are the job-shop electroplating standards for existing sources.

2 Incomplete treatment is the likely cause of the intermittent copper and total metals violations documented in the sample record, since the on-site treatment was found to be equivalent in design and performance to the models used in setting the Federal standards.

3 An opportunity to bypass treatment arises from the use of portable pumps and delivery hoses and from the apparent lack of an outlet from the reclaim system for salts build-up.

4 Performance has been greatly enhanced and the generation of waste streams greatly reduced through the on-site reclaim of the anodizing rinses and anodizing acid spents.

I certainly appreciate your helpfulness extended to me during this inspection. I remain available to Orange County and to you to assist in any way. Once again, thank you for your cooperation during this inspection. Please do not hesitate to call me at (415) 972-3504 or e-mail at arthur.greg@epa.gov.

Sincerely,

Original signed by:
Greg V. Arthur

Greg V. Arthur
CWA Compliance Office

Enclosure

cc: Roya Sohanaki, OCSD
Julio Lara, RWQCB-Santa Ana

U.S. ENVIRONMENTAL PROTECTION AGENCY

REGION 9

CLEAN WATER ACT COMPLIANCE OFFICE

NPDES COMPLIANCE EVALUATION INSPECTION REPORT

Industrial User:	Precision Anodizing & Plating, Incorporated 1601 North Miller Street, Santa Ana, California 92806-1417 40 CFR 413 Subparts A,D,E,F – Job-Shop Electroplating 40 CFR 433 Subpart A – Metal Finishing
Treatment Works:	Orange County Sanitation District Fountain Valley Wastewater Reclamation Plant No.1 and Huntington Beach Wastewater Treatment Plant No.2 (NPDES Permit CA0110604)
Date of Inspection:	June 20, 2005

Inspection Participants:

US EPA:	Greg V. Arthur, Region 9, CWA Compliance Office, (415) 972-3504
RWQCB-Santa Ana:	Julio Lara, Water Resources Control Engineer, (951) 782-4901 Najah Amin, Water Resources Control Engineer, (951) 320-6362
Orange County SD:	Roya Sohanaki, (714) 593-7437
Precision Anodizing:	John Ortiz, Environmental Manager, (714) 996-1601 Gregg Halligan, Vice President, (714) 996-1601

Report Prepared By:	Greg V. Arthur, Environmental Engineer December 5, 2005

1.0 Scope and Purpose

On June 20, 2005, EPA, the California Regional Water Quality Control Board Santa Ana Region ("RWQCB"), and the Orange County Sanitation District ("OCSD") conducted a compliance evaluation inspection of Precision Anodizing & Plating, Inc. in Santa Ana, California. The purpose was to ensure compliance with the Federal regulations covering the discharge of non-domestic wastewaters into the sewers. In particular, it was to ensure:

- Classification in the proper Federal categories;
- Application of the correct standards at the correct sampling points;
- Consistent compliance with the standards; and
- Fulfillment of Federal self-monitoring requirements.

Precision Anodizing & Plating is a significant industrial user ("SIU") within the OCSD sewer service area whose compliance was assessed as part of a 2005 evaluation of the OCSD pretreatment program by the RWQCB, its contractor, Tetra Tech, and EPA. The inspection participants are listed on the title page. Arthur conducted the inspection of Precision Anodizing & Plating on June 20.

1.1 Process Description

Precision Anodizing & Plating is a job-shop metal finisher operating at 1601 North Miller Street in Anaheim, California. The metal finishing comprises two zinc-plating lines for steel parts, and three aluminum anodizing lines. Precision Anodizing & Plating does not perform chromic-acid anodizing nor cyanide-based zinc plating.

Anodizing	• anodize line – caustic etching, HNO_3-deoxidation, NH_4HF_2-etching, H_2SO_4-anodizing, chromium conversion coating, dyeing (*red, blue, violet, gold, green, olive, grey*), HNO_3-dye strip, HNO_3/NH_4HF_2-bright dip desmut • 10-foot line – caustic etching, HNO_3-deoxidation, H_2SO_4-anodizng, dyeing (*black*), nickel acetate seal, DI hot water seal • 16-foot line – alkaline soap cleaning, caustic etch, HNO_3-deoxidation, H_2SO_4-anodizing, chromate conversion coating, dyeing (*black, gold*), nickel acetate seal
Plating	• hand line – alkaline soap cleaning, caustic electrocleaning, HCl-activation, acid-zinc plating, HCl-zinc strip, chromate passivation, chromate conversion coating • main plating line – alkaline cleaning, caustic electrocleaning, HCl-activation, acid-zinc plating, chloride-zinc plating, HNO_3-deactivation, chromate passivation (*black, yellow, clear*), acetic-acid activation

Precision Anodizing & Plating began operation in 1974. The company vice president believes that there have been no added or changed metal finishing lines since 1984, although there is no way for EPA to confirm this. All new plumbing was installed in 2000 in order to incorporate the use of an industrial wastewater reuse unit involving reverse osmosis and electrocoagulation. Precision Anodizing & Plating discharges its treated non-domestic and

domestic wastewaters to the City of Anaheim domestic sewers to the Orange County wastewater treatment plants. There is a single sewer connection into the domestic sewers designated in this report by permit number as IWD-21575. See Appendix 1.

1.2 Facility SIC Code

Precision Anodizing & Plating is assigned the SIC code for electroplating, plating, polishing, anodizing, and coloring, (SIC 3471).

1.3 Facility Wastewater Sources

The metal finishing lines generate metal finishing spents, rinses, and drainage, as well as fume scrubber blowdown and reverse osmosis reject brines. The 2005 Orange County pre-permit inspection report provides a detailed list of the solution and rinse tanks on-site identified by tank number. However, a number of the tanks were found during this inspection to be operated differently and than described in the pre-permit inspection report. See Appendix 1.

Spent Solutions – The imparted contamination from the processing of parts and the progressive drop in solution strength results in the generation of spent solutions. Precision Anodizing & Plating hauls off-site for disposal the black chromate passivation spents and zinc-plating spents. The H_2SO_4-anodizing spents are regenerated on-site through membrane ultrafiltration. The other spents from etching, cleaning, deoxidation, passivation, acid activation, sealing, and dyes are batch treated on-site.

Spent Solutions		
Hauled Off-site	On-site Batch Treatment	On-site Acid Recovery
chloride-zinc plating acid-zinc plating black chromate passivation	alkaline/soap cleaning caustic etching NH_4HF_2-etching HCl-acid activation HCl-strip HNO_3-deoxidation HNO_3-passivation acetic acid activation yellow chromate passivation blue chromate passivation HNO_3-NH_4HF_2-bright dip chrome conversion coating dyes nickel acetate sealing	H_2SO_4-anodizing
No Sewer Discharge	Discharged @ IWD-21575	No Sewer Discharge

Static Rinses – Precision Anodizing & Plating follows many but not all of its metal finishing steps with static rinses some in countercurrent series. Nearly all static rinses are treated and discharged through flow-through chemical treatment or batch chemical treatment. Most of the static rinses identified during this inspection were listed as running rinses in the Orange County pre-permit inspection report. Some of the static rinses actually may be operated as drag-outs although that could not be determined in this inspection.

Static Rinses		
Flow-Through Treatment	On-site Batch Treatment	Solution Make-Up Returns
hot DI static rinses chem film statics electroclean 1°statics caustic etch statics yellow chromate passivate clear chromate passivation bright dip statics dye 1°static zinc plating statics HCl-activation static acetic-acid activation HNO_3-desmut/passivate HNO_3-deoxidation Cr-conversion coat 1°/2° anodizing statics	black chromate passivation	HNO_3-deox drag-out
Discharged @ IWD-21575	Discharged @ IWD-21575	No Sewer Discharge

Running Rinses – Precision Anodizing & Plating employs a few first and second stage low-overflow rinses. No spray rinses were observed during this inspection. All anodizing overflows are treated through the wastewater reclaim unit. The remaining running rinses are treated through the flow-through chemical treatment unit.

Running Rinses		
Flow-Through Treatment	On-site Batch Treatment	On-site Wastewater Reclaim
electroclean low-overflows dye low-overflows zinc plating low overflow alk cleaning low-overflow caustic etch low-overflows HNO_3-deox low-overflow HNO_3-activate low-ovrflw Cr-conversion coat 3° Ni-acetate low-overflow		anodizing low-overflows
Discharged @ IWD-21575	n/a	No Discharge Specified

Blowdowns and Tailwaters – Reverse osmosis reject brines and fume scrubber blowdown also are generated on-site and treated for discharge to the sewers.

Other Process Flows		
Flow-Through Treatment	On-Site Batch Treatment	Untreated
reverse osmosis brines fume scrubber blowdown		
Discharged @ IWD-21575	n/a	n/a

Domestic Sewage – Domestic sewage discharges into the City of Anaheim sewer lateral through separate connections downstream of the industrial wastewater connection.

1.4 Facility Process Wastewater Composition

The process wastewaters listed in section 1.3 above would be expected to contain chromium, copper, nickel, silver, zinc, ammonia, complexed cyanide, acidity, salts, dyes, and surfactants, as well as iron, aluminum, nitrates, free oils, sulfides, and suspended solids.

1.5 Facility Process Wastewater Treatment

Precision Anodizing & Plating operates two flow-through wastewater treatment units and two batch chemical treatment tanks to treat all generated spent solutions, static rinses, running rinses, brines and blowdowns. The 2004 Orange County annual report lists an annual average discharge of 82,000 gallons per day ("gpd") to the sewers, although the reclaim of the reverse osmosis water is likely to greatly reduce discharge. See Appendix 1.

Delivery – Spent solutions and static rinses are delivered to batch treatment through the use of a portable sump pump and hoses. The rinses now feed into transfer tanks that allow the diversion of some or all of the flow away from the flow-through chemical treatment unit and to the reverse osmosis water reclaim unit. See the photos in section 1.7 of this report.

Flow-Through Chemical Treatment – Precision Anodizing & Plating provides conventional metals removal of the rinses through two parallel chemical treatment trains. Both provide influent equalization, metals hydroxide precipitation, and polymer-aided settling. One treatment trains also handles batch treated spents. Neither treatment train provides chrome reduction or cyanide destruction. The EPA inspector could not determine throughput.

Batch Treatment – Precision Anodizing & Plating also operates two batch treatment tanks to handle most spents. One provides chromium reduction and metals precipitation with the treated contents delivered by carboy to flow-through chemical treatment. The other is used for metals precipitation and unaided settling with the tank bottoms sent through a filter press and decant returned to the flow-through chemical treatment. The EPA inspector could not determine the volume handled through batch treatment.

Reverse Osmosis Reclaim – Precision Anodizing & Plating has the capability to reclaim over 40,000 gpd of rinse water. Reclaim consists of a lead reverse osmosis unit (RO Unit 1) producing ~28,000 gpd of RO water followed by low-TDS treatment of the RO reject brines. RO Unit 1 operates at a 50% reject rate generating ~14,000 gpd of RO reject brines. The RO Unit 1 reject brines and other general rinses proceed through sacrificial iron electrocoagulation to remove metals and other pollutants without the use of salts-forming reagents. Electric current causes iron anodes to electrolytically dissolve forming ferrous oxides and hydroxides. It also destabilizes other dissolved metals to form insoluble oxides/hydroxides and reduces others to insoluble elemental particles. The ferrous oxides then suppress the surface charges allowing particles to bind for flocculant-aided settling through an upflow plate clarifier. The clarifier sludges are thickened and filter pressed with the filtrate returned into the RO Unit 1 reject brine. The clarifier decant is polished through sand filtration and carbon adsorption before feeding through a scavenger unit (RO Unit 2). RO Unit 2 operates at a 20% reject rate which produces ~12,000 gpd of RO water for ozone disinfection and on-site reclaim, and ~2,400 gpd of RO reject brines. Precision Anodizing & Plating claims that the RO Unit 2 reject brines entirely return for re-treatment through electrocoagulation.

Acid Reclaim – Precision Anodizing & Plating reclaims anodizing sulfuric acids spents through ultrafiltration with the permeate delivered for to flow-through chemical treatment.

Residuals Handling – Filter cake from the two filter presses, and the zinc-plating and black-chromate passivation spents are hauled off-site as hazardous to Beatty, Nevada.

Sewer Discharge and Compliance Sampling – Treated wastewaters discharge to the sewers through a clarifier, which serves as the permitted compliance sampling point, IWD-21575.

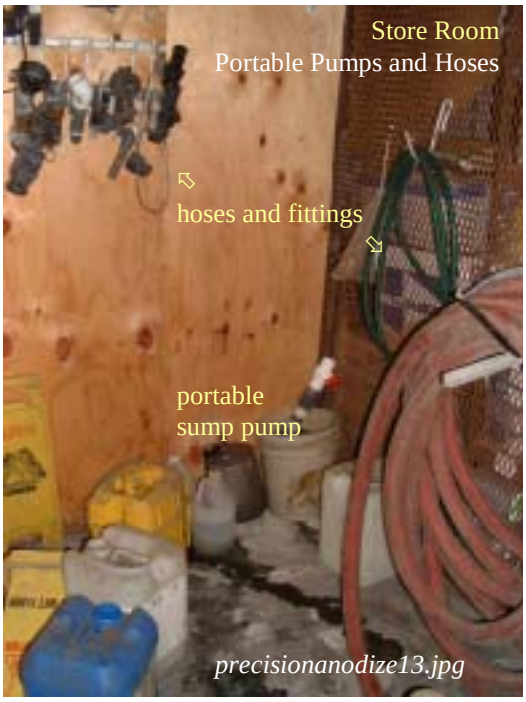
Operational Controls – Precision Anodizing & Plating benefits from the on-site reclaim of rinses and anodizing acids. However, the rinse reclaim does not have an apparent outlet for salts. An suitable outlet might be the periodic blowdown of RO Unit 2 reject brines through treatment to the sewers. Both reclaim methods improve the reliability and performance of wastewater treatment. The company has also implemented a few good operational controls that improve wastewater discharge quality. For example, flow-through treatment benefits from metered inflow, while batch treatment benefits from operating in batch mode and in the sequenced segregation of waste streams. The company has not extensively applied production-related controls, such as the use of multiple-staged static rinses, over-tank spray rinses, and deactivation rinses between processing steps of differing surface chemistry.

1.6 POTW Legal Authorities

Orange County Sanitation Districts – OCSD operates an EPA-approved pretreatment program as required by the State of California in the Santa Ana RWQCB's Waste Discharge Requirements, No. R8-2004-0062, reissued to OCSD in 2004, and serving as NPDES Permit No. CA0110604. As part of this, OCSD has established sewer use Ordinance No.1 that applies to all industrial users of its sewer system. Under this authority, Orange County issued an industrial user permit to Precision Anodizing & Plating, No. 2-1-575 covering the sewer discharge from IWD-21575.

1.7 Photo Documentation

Arthur took seven digital photographs during this inspection. The file names are *precisionanodize.7.jpg* through *precisionanodize13.jpg*. Four of the photographs are depicted below. The others not depicted were duplicates.



Top left shows the sump pump and spare hoses believed to be used to deliver spents to batch treatment (*precisionanodize13.jpg*). The other three show the three transfer tanks installed to allow the diversion of rinses from the anodizing lines and the zinc-plating line to the RO units for in-plant reuse (*~8.jpg, ~9.jpg, and ~11.jpg*).

Photos Taken by: Greg V. Arthur
Date: June 20, 2005

2.0 Sewer Discharge Standards and Limits

Federal categorical pretreatment standards (where they exist), national prohibitions, and the local limits (where they exist) must be applied to the sewered discharges from industrial users. (40 CFR 403.5 and 403.6).

The Federal categorical pretreatment standards for job-shop electroplating in 40 CFR 413 for existing sources apply to the process wastewater discharges from Precision Anodizing & Plating through IWD-21575. The OCSD permit correctly applied local limits and the Federal standards for existing sources in 40 CFR 413. However, OCSD has not enforced the four-day average Federal standards. As a result, while the permit does accurately state the discharge requirements for Precision Anodizing & Plating, in effect, the four-day average standards have not been applied. The application of Federal categorical standards, national prohibitions, and local limits was determined through visual inspection. See Appendix 2 for the sewer discharge standards and limits.

Requirements

- The daily-maximum and four-day average Federal standards for existing source job-shop electroplating must be applied to the discharge through IWD-21575.

- The permit must prohibit the bypassing of treatment necessary to comply with Federal standards, national prohibitions, and local limits.

Recommendations

- Both a water balance and a salts loading balance should be prepared for the RO reclaim system, in order to document how the build-up of salts is prevented.

2.1 Classification by Federal Point Source Category

Precision Anodizing & Plating qualifies as a job-shop metal finisher subject to the Federal job-shop electroplating standards for existing sources in 40 CFR 413 (>10,000 gallons per day). OCSD correctly classified Precision Anodizing & Plating. Federal standards are self-implementing which means they apply to regulated waste streams whether or not they are implemented in a local permit. The Federal rules in 40 CFR 403.6 define domestic sewage and non-contact wastewaters to be dilution waters.

New or Existing Sources – Precision Anodizing & Plating continues to be subject solely to the Federal standards for existing sources. Under the definitions in 40 CFR 403.3(k), a process constructed at an existing source job-shop metal finisher after August 31, 1982 is a new source (1) if it entirely replaces a process which caused a discharge from an existing source or (2) if it is substantially independent of the existing sources on-site. This means the new source standards apply to the original installation of the metal finishing lines, rebuilt or moved lines, or existing lines converted to do new operations. This also means the new source standards generally do not apply to the piecemeal replacement of tanks for mainten-

ance in otherwise intact metal finishing lines, nor do they apply to the upgrading of treatment without altering production lines. The preamble to the final 1988 Federal rule states that the new source standards apply when "an existing source undertakes major construction that legitimately provides it with the opportunity to install the best and most efficient production process and wastewater treatment technologies" (*Fed Register, Vol.53, No.200, October 17, 1988, p.40601*). Precision Anodizing & Plating does not qualify as a new source because the wastewater treatment improvements did not involve either the new installation or the removal and reinstallation of the metal finishing lines that would also provide an opportunity to upgrade the production lines. Instead, Precision Anodizing & Plating simply installed transfer tanks end-of-pipe to allow the diversion of the generated rinses to a new wastewater reclaim system.

2.2 Local Limits and National Prohibitions

Local limits and the national prohibitions are meant to express the limitations on non-domestic discharges necessary to protect the sewers, treatment plants and their receiving waters from adverse impacts. In particular, they prohibit discharges that can cause the pass-through of pollutants into the receiving waters or into reuse, the operational interference of the sewage treatment works, the contamination of the sewage sludge, sewer worker health and safety risks, fire or explosive risks, and corrosive damage to the sewers. The national prohibitions apply nationwide to all non-domestic sewer discharges. The OCSD local limits apply to non-domestic discharges in the OCSD service area.

2.3 Federal Categorical Pretreatment Standards
Existing Source Job-Shop Electroplating >10,000 gpd - 40 CFR 413

40 CFR 413 >10kgpd	Cd	Cr	Cu	Pb	Ni	Ag	Zn	CNt	TTO	TM
daily-maximum (mg/l)	1.2	7.0	4.5	0.6	4.1	-	4.2	1.9	2.13	10.5
four-day average (mg/l)	0.7	4.0	2.7	0.4	2.6	-	2.6	1.0	-	6.8
stat conversion to mo-avgs	0.5	2.5	1.8	0.3	1.8	-	1.8	0.55	-	5.0

Applicability - The Federal job-shop electroplating standards apply to job-shop metal finishers that do not own more than 50% of the parts processed and were in operation in their present configuration before the August 31, 1982 proposal date of the Federal metal finishing rule. This means the job-shop electroplating standards in 40 CFR 413.14(c)(g), 413.44(c)(g), 413.54(c)(g), and 413.64(c)(g) apply to all of the process wastewater discharges at Precision Anodizing & Plating to the sewers through IWD-21575.

Basis of the Standards – The job-shop electroplating standards were based on a model pretreatment unit that comprises metals precipitation, settling, sludge removal, source control of toxic organics, and if necessary, cyanide destruction and chromium reduction. The best-available-technology standards were set where printed circuit board manufacturers and other job-shop metal finishers with model treatment operated at a long-term average and variability that achieved a compliance rate of 99% (1 in 100 chance of violation).

Adjustments – The Federal categorical pretreatment standards at IWD-21575 do not need to be adjusted to account for dilution or for dual Federal categories because all wastewaters through this compliance sampling point qualify as Federally-regulated under 40 CFR 413. See Appendix 2 for the adjusted Federal categorical pretreatment standards as applied to IWD-21575.

Compliance Deadline - Existing source job-shop metal finishers were required to comply with all Federal job-shop electroplating standards by the final compliance deadline of July 31, 1986.

2.4 Prohibition Against Bypassing

The Federal standards in 40 CFR 403.17 prohibit the bypassing of any on-site treatment necessary to comply with standards. Bypassing is possible at Precision Anodizing & Plating since the RO reclaim system does not have an apparent outlet for the build-up of salts, and the spents are delivered to treatment with portable pumps and hoses.

2.4 Point(s) of Compliance

Local limits and the national prohibitions apply end-of-pipe to all non-domestic flows from Precision Anodizing & Plating. The sample point designated in this report as IWD-21575 is a suitable end-of-pipe sample point representative of the day-to-day non-domestic wastewater discharges. Federal categorical pretreatment standards apply end-of-process-after-treatment to all Federally-regulated discharges to the sewers. The sample point IWD-21575 is also a suitable sample point representative of the day-to-day discharge of Federally-regulated wastewaters.

2.5 Compliance Sampling

Local limits and the national prohibitions are instantaneous-maximums and are comparable to samples of any length including single grab samples. Federal categorical pretreatment standards are daily-maximums comparable to 24-hour composite samples. The Federal four-day average standards are arithmetic four-sample rolling averages of consecutive 24-hour composite samples. The 24-hour composite samples can be supplanted with single grabs or manually-composited grabs that are representative of the sampling day’s discharge.

3.0 Compliance with Federal Standards

Industrial users must comply with the Federal categorical pretreatment standards that apply to their process wastewater discharges. 40 CFR 403.6(b).

Categorical industrial users must comply with the prohibition against dilution of the Federally-regulated waste streams as a substitute for treatment. 40 CFR 403.6(d).

Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).

Wastewater treatment at Precision Anodizing & Plating is equivalent in design to the best-available-technology model treatment used in originally setting the Federal standards. The on-site reclaim of anodizing rinses and acids is a particularly good aspect of design. As a result, Precision Anodizing & Plating nearly always achieves the consistent compliance expected from model treatment. However, samples have exceeded the Federal standards for copper and total metals. Incomplete chemical reactions related to treatment are the likely cause. In addition, the Federal standards were correctly advanced in the OCSD permit but not fully enforced. There is no evidence of dilution as a substitute for treatment, however, the use of portable pumps and hoses and the lack of a specified blowdown from wastewater reclaim provide an opportunity of bypassing of treatment. See Appendix 3.

Requirements

- Precision Anodizing & Plating must achieve consistent compliance with its Federal four-day average standards for copper and total metals (*copper, chromium, nickel, zinc*).

- All wastewaters discharged to the sewers must discharge through either or both of the flow-through chemical treatment units.

Recommendations

- The clarified effluent from both flow-through chemical treatment trains should be tested for copper, chromium, nickel, zinc, and TDS in order to determine treatment efficiencies.

- Flow-through treatment should be reconfigured to provide two-stage metals removal in series, stage one iron co-precipitation and settling at pHs ~7.0, and stage two at pHs ~9.0.

- ORP and pH metering should be installed and used in all treatment units (both flow-through and batch) to ensure that all reaction end-points are met.

- Hard-piped feeder lines should be installed from the treatment units to the processing areas either to eliminate the use of portable pumps or to shorten the delivery hoses, so that there is no potential for an unauthorized bypass.

- Any blowdown from the wastewater reclaim unit should be tested for zinc, copper, nickel, chromium, and TDS prior to discharge into further treatment or to the sewers.

- Batch treated spents should be directed for further treatment through the filter press.

- The monthly-average statistical conversion factors in Section 2.3 should be used as operational benchmarks to ensure consistent compliance with the Federal standards.

3.1 Sampling Records

The 2003-2005 sample records for IWD-21575 consists of monthly self-monitoring and quarterly samples collected by OCSD. These samples indicate that Precision Anodizing & Plating, as currently designed and operated, complies with Federal standards most of the time. For copper, the average and calculated 99th% peaks of 1.07 and 3.48 mg/l resulted in one period of five consecutive samples exceeding the Federal standards, a ~15% violation rate (*1¼ periods of violation in 9 four-consecutive sampling day periods*). For total metals, the average and calculated 99th% peaks of 3.19 and 7.43 mg/l resulted in one period of four consecutive samples exceeding the Federal standards. No other samples exceeded Federal standards, with averages and calculated 99th% peaks of <0.01 and <0.02 mg/l cadmium, 0.34 and 1.11 mg/l chromium, 0.06 and 0.17 mg/l lead, 0.47 and 1.36 mg/l nickel, 1.25 and 3.53 mg/l zinc, <0.11 and <0.25 mg/l total cyanide, and <0.01 and <0.03 mg/l total toxic organics.

The sample results are usable for determining compliance with the Federal standards. The 24-hour composite samples are representative over the sampling day and over the Federally-required six month reporting period, since the discharges to the sewers, including those that would otherwise impart variability such as the batch treated spents, do so through the flow-through chemical treatment unit and final clarifier. The only exceptions are reclaimed on-site or hauled-off site. As a result, the day-to-day variability in the discharge quality would be most affected and attenuated by the treatment processes itself. See section 5.0 on page 17.

3.2 Best-Available-Technology Treatment

Flow-Through Chemical Treatment – All wastewater discharges to the sewers discharge through flow-through metals precipitation and settling. This is equivalent in design to the model BAT treatment used in setting the Federal standards, as long as chromium reduction and cyanide destruction are not necessary. No waste streams on-site contain amenable cyanide, however, some do contain complexed cyanides (*chromium conversion coating*), and hexavalent chromium (*chromate passivation, chromium conversion coating*). These cyanide- and chromium-bearing spents undergo batch chemical treatment prior to entering the flow-through chemical treatment trains and there have been no violations of the Federal standards for cyanide and chromium. As a result, the flow-through chemical treatment at Precision Anodizing & Plating is considered to be equivalent in design to the model BAT treatment.

However, none of the treatment processes are metered to ensure achievement of the reaction end-points. The following chemical reactions require these end-points: chromium reduction (ORP > 200 mv / pHs ~2.0); metals precipitation of copper, nickel, chromium (pHs ~7.5); and metals precipitation of zinc (pHs ~9.2). Failure to reach the reaction end-points would compromise the model BAT treatment.

Reverse Osmosis Reclaim – Roughly half of the total wastewater produced is reclaimed through reverse osmosis reclaim and low-TDS electrocoagulation. In most applications, this would be considered to exceed in performance and to be equivalent in design to the BAT model treatment. However, in this case the reclaim unit produces high quality effluent for reuse and not discharge. If there is a discharge to the sewers, it is likely of untreated RO reject brines from the second scavenger RO unit, although this is not verified as of yet. As a result, the reverse osmosis reclaim unit cannot be considered equivalent in design to the BAT model treatment since any blowdowns from the system must be treated prior to discharge to the sewers through either the flow-through or batch chemical treatment units.

Batch Chemical Treatment – The batch treatment tanks on-site cannot be considered to provide treatment equivalent to the model BAT treatment since they do not involve the settling of all generated metals precipitates. It would be more efficient to utilize the filter press to remove the sludges that form through the batch treatment of the spents, as long as the press filtrate returns, as it does now, to the flow-through chemical treatment trains.

3.3 Dilution as a Substitute for Treatment

The Federal standards in 40 CFR 403.6(d) prohibit "dilution as a substitute for treatment" in order to prevent compromising BAT model treatment with dilute waste streams. This prohibition particularly applies when sample results for a diluted waste stream are below the Federal standards and the apparent compliance is used to justify discharge without treatment. There are two conditions that need to be established in order to make a determination of non-compliance with this prohibition. First, some or all of the Federally-regulated wastewaters must discharge without undergoing BAT model treatment or its equivalent. Second, there must be some form of excess water usage within a Federally-regulated process.

There is no evidence of dilution as a substitute for treatment since all process wastewaters discharge to the sewers through treatment equivalent to or exceeding BAT model treatment.

3.4 Bypass Provision

The Federal standards in 40 CFR 403.17 prohibit the bypassing of any on-site treatment necessary to comply with standards unless the bypass was unavoidable to prevent the loss of life, injury, or property damage, and there were no feasible alternatives. This provision explicitly prohibits bypasses that are the result of a short-sighted lack of back-up equipment for normal downtimes or preventive maintenance. It also explicitly prohibits bypasses that could be prevented through wastewater retention or the procurement of auxiliary equipment. It specifically allows bypasses that do not result in violations of the standards as long as there is prior notice and approval from the sewerage agency or State.

The use of portable pumps and hoses to deliver spents to the batch treatment and the lack of a specified blowdown outlet from the reverse osmosis reclaim unit provides the opportunity to bypass treatment at Precision Anodizing & Plating.

4.0 Compliance with Local Limits and National Prohibitions

All non-domestic wastewater discharges to the sewers must comply with local limits and the national prohibitions. 40 CFR 403.5(a,b,d).

Industrial users must comply with the provision restricting the bypass of treatment necessary to comply with any pretreatment standard or requirement. 40 CFR 403.17(d).

Compliance with the Federal requirements would be expected to also result in compliance with the local limits for copper, and total metals. No controls are necessary for the other metals, pesticides, cyanide, sulfides, flammability, or PCBs because Precision Anodizing & Plating is not expected to discharge wastewaters containing significant levels of these locally-limited pollutants. However, the acidic and alkaline nature of the metal finishing and the pH adjustment inherent in operating treatment supports the need to install continuous final pH metering. Acidic wastewaters in particular pose a risk to worker health and safety through exposure and the release of toxic fumes, as well as acidic degradation of the sewers themselves. See Appendix 3. Also see Section 3.0 of this report.

Requirements

- None.

Recommendations

- None.

4.1 National Objectives

The general pretreatment regulations were promulgated in order to fulfill the national objectives to prevent the introduction of pollutants that:

(1) cause operational interference with sewage treatment or sludge disposal,
(2) pass-through sewage treatment into the receiving waters or sludge,
(3) are in any way incompatible with the sewerage works, or
(4) do not improve the opportunities to recycle municipal wastewaters and sludge.

This inspection did not include an evaluation of whether achievement of the national objectives in 40 CFR 403.2 have been demonstrated by the OCSD wastewater treatment plants through consistent compliance with their sludge and discharge limits.

4.2 Local Limits for Oxygen Demanding Pollutants and The National Prohibition Against Interference

The wastewaters discharged to the sewers are not high enough in organics strength to pose a risk of interference, with average and statistical maximums for BOD of 11 and 46 mg/l.

4.3 Local Limits for Toxic Metals, Cyanide, and Other Pollutants and The National Prohibition Against Pass-Through

Federally-Regulated Metals – Corrective actions necessary to achieve consistent compliance with the Federal standards for copper and total metals (*copper, chromium, nickel, zinc*) would be expected to also result in compliance with the local limit for copper.

Mercury and Arsenic – Although mercury and arsenic are regulated solely by local limits and not by Federal standards neither pollutant would be expected in the discharges in concentrations requiring treatment beyond the model BAT treatment for Federal standards, if at all.

Total or Amenable Cyanide – The wastewaters discharged through IWD-21575 are not expected to contain any amenable cyanide-bearing wastewaters. Although some chromium conversion coating wastewaters contain complexed cyanides, all samples for total cyanide were below the detection limits.

Toxic Organics – OCSD reviewed and approved a toxic organics management plan with self-certifications in lieu of self-monitoring. As a result, toxic organics are not expected in significant amounts. All samples were below the detection limit.

Oil and Grease – Petroleum oil and grease is unlikely to be entrained in the wastewater discharge to the sewers.

Pesticides and PCBs – These pollutants are not expected in the discharge to the sewers.

4.4 Flammability

Flammability would not be expected because the toxic organics management plans prevent the discharge of volatile organics to the sewers.

4.5 Local Limits for pH and Sulfides, and The National Prohibitions Against Safety Hazards and Corrosive Structural Damage

Sewer collection system interferences related to the formation of hydrogen sulfide and the resulting acidic disintegration of the sewers are not expected because the wastewaters discharged to the sewers are not high-strength in biodegradable organics. However, uncontrolled acidic and alkaline discharges can result in safety hazards related to the release of toxic fumes, worker exposure risks, and acidic disintegration of the sewers. The overall discharge to the sewers does not undergo final pH adjustment to ensure neutral conditions in the sewers.

5.0 Compliance with Federal Monitoring Requirements

Significant industrial users must self-monitor for all regulated parameters at least twice per year unless the sewerage agency monitors in place of self-monitoring. 40 CFR 403.12(e) & 403.12(g).

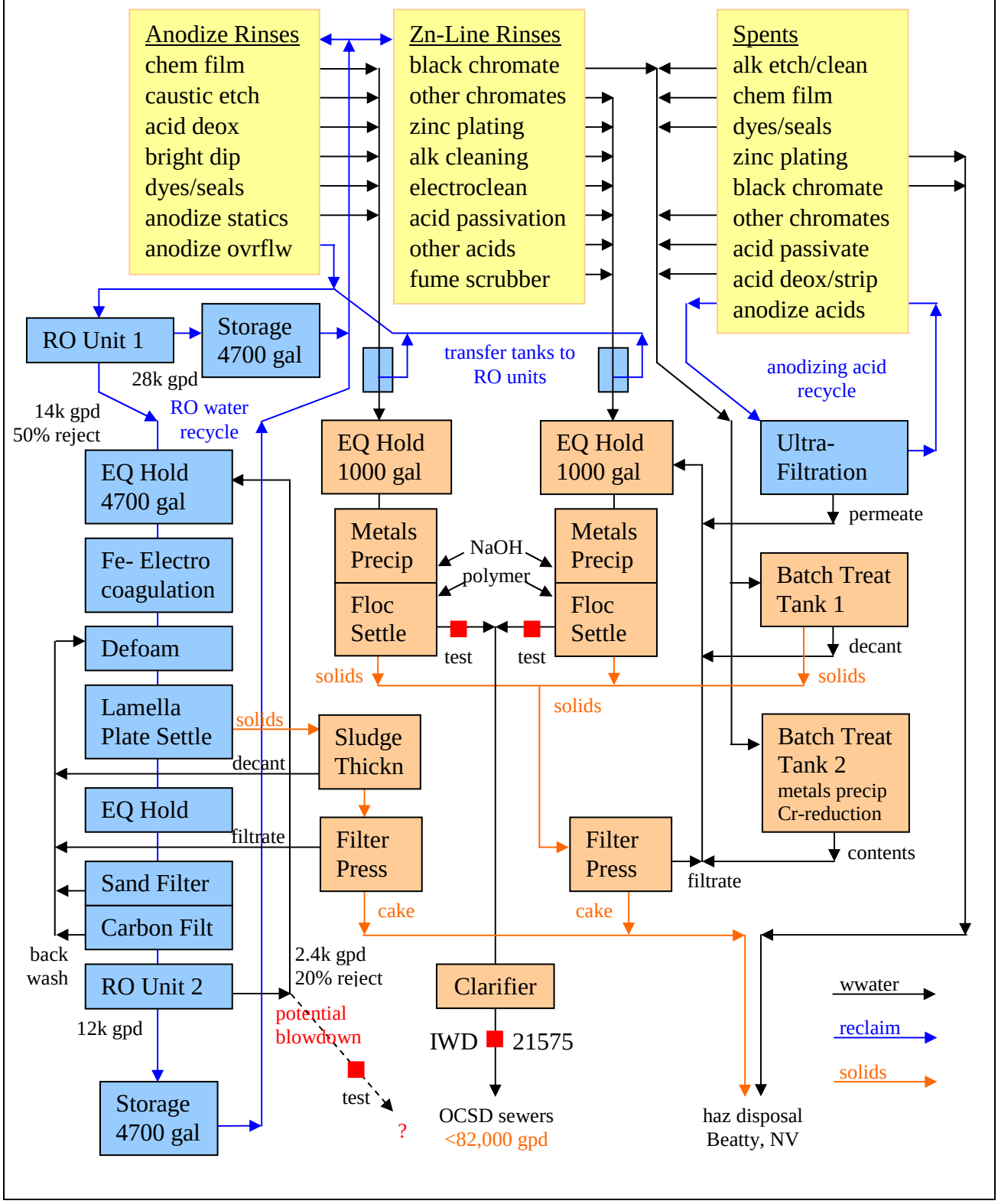
Each sample must be representative of the sampling day's operations. Sampling must be representative of the conditions occurring during the reporting period. 40 CFR 403.12(g) and 403.12(h).

The sample record for Precision Anodizing & Plating is representative of the sampling day's operations and over the six-month reporting period. A sample record that results in more than 10 samples per year would be considered statistically representative over the reporting period, as long as the contributing discharges and the operation of treatment are proven to be essentially random. Only a minimum number of samples are needed for the Federally-regulated pollutants not present significant amounts (cadmium, total cyanide). No samples are needed for the pollutants solely regulated by local limits or national prohibitions with one exception. The final pHs need to be continuously monitored as long as most flows discharge without final pH adjustment. See section 3.1 on page 13.

Requirements

- See Appendix 2 for the expected self-monitoring requirements for IWD-21575.

Appendix 1
Precision Anodizing & Plating
Schematic of the Wastewater Collection and Treatment



Appendix 2
Sewer Discharge Standards and Limits
Precision Anodizing & Plating @ IWD-21575

pollutants of concern (mg/l)	Expected upon revision of the OCSD industrial users permit				
	① Federal standards (daily-max)	① Federal standards (4-day-avg)	national prohibitions (inst-max)	OCSD local limits (daily-max)	Projected monitoring frequency
arsenic	-	-	-	2.0	④
cadmium	1.2	0.7	-	1.0	2/year
chromium	7.0	2.6	-	2.0	1/month
copper	4.5	2.7	-	3.0	1/month
lead	0.6	0.4	-	2.0	1/month
mercury	-	-	-	0.03	④
nickel	4.1	2.6	-	10.0	1/month
silver	-	-	-	5.0	④
zinc	4.2	4.0	-	10.0	1/month
total cyanide	1.9	1.0	-	5.0	2/year
amenable cyanide	-	-	-	1.0	-
total toxic organics	2.13	-	-	0.58	⑤
total metals	10.5	6.8	-	-	1/month
pesticides	-	-	-	0.01	④
PCBs	-	-	-	0.01	④
total sulfides	-	-	-	5.0	④
dissolved sulfides	-	-	-	0.5	④
oil and grease - petroleum	-	-	-	100.0	④
flow (gpd)	-	-	-	-	continuous
pH (s.u.)	-	-	<5.0	6.0 to 12.0	continuous
explosivity	-	-	<140°F ②	10% LEL ③	④

① No adjustment necessary
② Closed-cup flashpoint
③ 10% of the Lower Explosivity Limit
④ As part of periodic priority pollutant scans in order to identify changes in discharge quality
⑤ Toxic organics management plans allow certifications in lieu of twice-per-year self-monitoring.

Appendix 3
Precision Anodizing & Plating Wastewater Discharge Quality @ IWD-21575
January 2003 – June 2005

pollutants ② (µg/l)	Effluent sampling results			violation rate ①		sample count	loading (lbs/yr)
	Mean	99th%	max	sample	4-day ④		
arsenic	-	-	-	-	-	0	-
cadmium	<11	<20	<20	0/36	0/9	36	<1.0
chromium	335.9	1110.0	1380	0/36	0/9	36	29.4
copper	1067.6	3476.9	5000	**2/36**	**1¼ / 9**	36	93.3
lead	57.8	169.0	217	0/36	0/9	36	5.1
mercury	-	-	-	-	-	0	-
nickel	464.9	1359.8	1815	0/36	0/9	36	40.6
silver	<11	<40	<40	0/5	-	5	-
zinc	1252.8	3533.6	2935	0/36	0/9	36	109.5
total cyanide	<110	<250	<250	0/9	0/2¼	9	<9.6
total toxic organics	<10	<10	<10	0/5	-	5	<0.9
total metals ③	3188.3	7428.8	8800	0/36	0/9	36	278.8
pesticides	-	-	-	-	-	-	-
PCBs	-	-	-	-	-	-	-
total sulfides	-	-	-	-	-	-	-
dissolved sulfides	-	-	-	-	-	-	-
oil and grease - petroleum	-	-	-	-	-	-	-
flow (gpd)	-	-	-	-	-	-	-
pH (s.u.)	-	-	-	-	-	-	-
explosivity	-	-	-	-	-	-	-

① List of violations, indicating the days of violation under the Clean Water Act, follows below
② No sample results for the following pollutants of concern: flow, and pH
③ Total metals defined as the summation of chromium, copper, nickel, and zinc, 40 CFR 413.02(e)
④ 4-day-averages calculated by averaging four consecutive samples

Sample Date	Type	Sampler	Standards and Limits @ IWD-21575 Violation		DaysViol
07/20/04-07/19/04 06/15/04-06/08/04	24-h	OCSD & IU	Fed Cu 4day-avg 2.7 mg/l	3.39 mg/l	1
07/19/04-06/15/04 06/08/04-05/12/04	24-h	OCSD & IU	Fed Cu 4day-avg 2.7 mg/l	3.14 mg/l	4
07/19/04	24-h	OCSD	Fed Cu daily-max 4.5 mg/l	5.0 mg/l	
07/19/04	24-h	OCSD	local Cu instant-max 3.0 mg/l	5.0 mg/l	1
07/19/04-06/15/04 06/08/04-05/12/04	24-h	OCSD & IU	Fed TM 4day-avg 6.8 mg/l	6.84 mg/l	4
05/12/04	24-h	OCSD	local Cu instant-max 3.0 mg/l	3.26 mg/l	1
Total Days of Violation (January 2003 June 2005)					11